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DACA II Review Task Force Conference Call Minutes (Meeting #11)
Thursday November 10, 2022
9:00-10:30 AM Central

Minutes recorded by Patrick Lang
Direct any comments or corrections to: patrick.lang@swri.org

Membership:

The attendance list can be found as Attachment #1.

Agenda:

The proposed agenda can be found as Attachment #2.

Approval of Minutes:

Pat Lang advised that the minutes from the September 21, 2022, call were distributed to the group prior to the meeting and has received no comments or requested changes. Motion was made to approve the minutes by Bill Buscher and seconded by John White. The minutes were approved unanimously.

Discussion:

The meeting started with Pat Lang reviewing the Bad Quality Data/Missing Data flow charts that were proposed at the last meeting (see attachment #3). The action item from the last call was to add wording to the chart to state that the chart applies to critical parameters. Upon reviewing the chart, Bob Campbell wanted some clarification on the definition of a critical parameter. He felt that the term “controlled parameter” was a better description.

The group agreed with this wording change.

Action: Change working in flow chart from "critical" parameter to "controlled" parameters.

With the suggested wording change, Pat asked the group if there were any objections to this latest version of the flow chart. Hearing no objections, Pat advised that this will be the final version of the flow chart and will be incorporated into DACA III.

At this point in the meeting Pat Lang directed the discussion towards the uncertainty topic.

Pat gave a brief overview of what was discussed on the last call regarding uncertainty. The action item from the last call was for labs to go back and talk to their resident experts to determine if some of the uncertainty methods/practices are already in use in their lab. If so, provide any comments or recommendations on a potential way to outline a measurement uncertainty method in DACA III.

At this point labs were individually asked if they had any comments:

George from LZ stated that he thinks it is important if measurement uncertainty (MU) is defined in DACA III that it provides some minimum guidance as to the process that is to be used.

Bill Buscher commented that he has asked his people to look into further and at this point they are not sure. They need to understand what would actually be required with MU. They need a baseline to understand the impact of the requirement.

Michael Tucker from ExxonMobil stated that there are many new engineers in his facility, and they don't have experience with MU at this point, but they are 17025 accredited.

Bob Campbell from Afton stated that he feels it makes sense to improve on methods as we go forward but we need to be realistic about upgrading to MU if it is not needed. MU will likely create a lot of additional effort and resources to sustain.

Marian O'Donnel from LZ showed a few examples of uncertainty assessment in their lab. This led into a lengthy discussion on the details of how this assessment should be done and how we could potentially define it in DACA III. Tom Wirries of SwRI advised that the Guide to Uncertainty (GUM) document defines the methodology in great detail. However not all of what is in the document is required for various lab accreditations that are typically sought after by engine testing labs.

After additional discussion the group agreed that defining a measurement uncertainty method in DACA III would be very difficult. The consensus was to not add any requirements to the DACA III document for measurement uncertainty. A paragraph will be added stating that for new test developments, the respective surveillance panels should consider the potential need for utilizing MU assessment for any parameter they deem appropriate. SwRI had already prepared some suggested wording for the MU as shown in attachment # 4.

Action Item:

As of the end of this meeting this task force had successfully gone through all areas of the DACA III document. The next step is for Pat Lang to incorporate all of the changes into one final document and send that to the group for one final review.

Adjournment:

The meeting was adjourned at 10:30 AM CST.

Attachment #1

Attendance List

Attendance List for DACA II Document Review Task Force

Name	Company	Present 11-10-22 X= present
Amol Savant	Valvoline	
Al Lopez	Intertek	X
Bill Buscher		X
George Szappanos	Lubrizol	X
Richard Hutchinson		
Marian O'Donnel		X
Randy Harmon	Southwest Research	X
John White		X
Ron Barthold		
Khaled Rais		X
Bob Warden		
Carlos Washington		X
Tom Wirries		X
Chris Desruisseau		X
Bob Campbell	Afton	X
Tim Cushing	General Motors	
Andy Ritchie	Infineum	
Michael Tucker	Exxon Mobil	X
Rohit Rao		
Jason Griffin		X
Mike Deegan	Ford	
Robert Stockwell	Oronite	
Jeff Clark	Test Monitoring Center	
Rich Grundza		
Sean Moyer		

Attachment #2

Agenda

AGENDA

Data Acquisition and Control Automation II (DACA II) Review Task Force
Virtual Meeting (WebEx) #11

Patrick Lang – Chairman

Thursday November 10, 2022– 9:00 AM to 10:30 AM (CST)

1. Attendance

2. Approval of the Minutes from the September 21, 2022 meeting.

3. Review Items:

    1) Review the “final” version of the BQD/Missing Data flow chart that was discussed on the last call and make final decision on incorporating it into the DACA III document.

    2) Continue discussion on uncertainty/accuracy

4. Determine topic for next meeting.

5. New Business

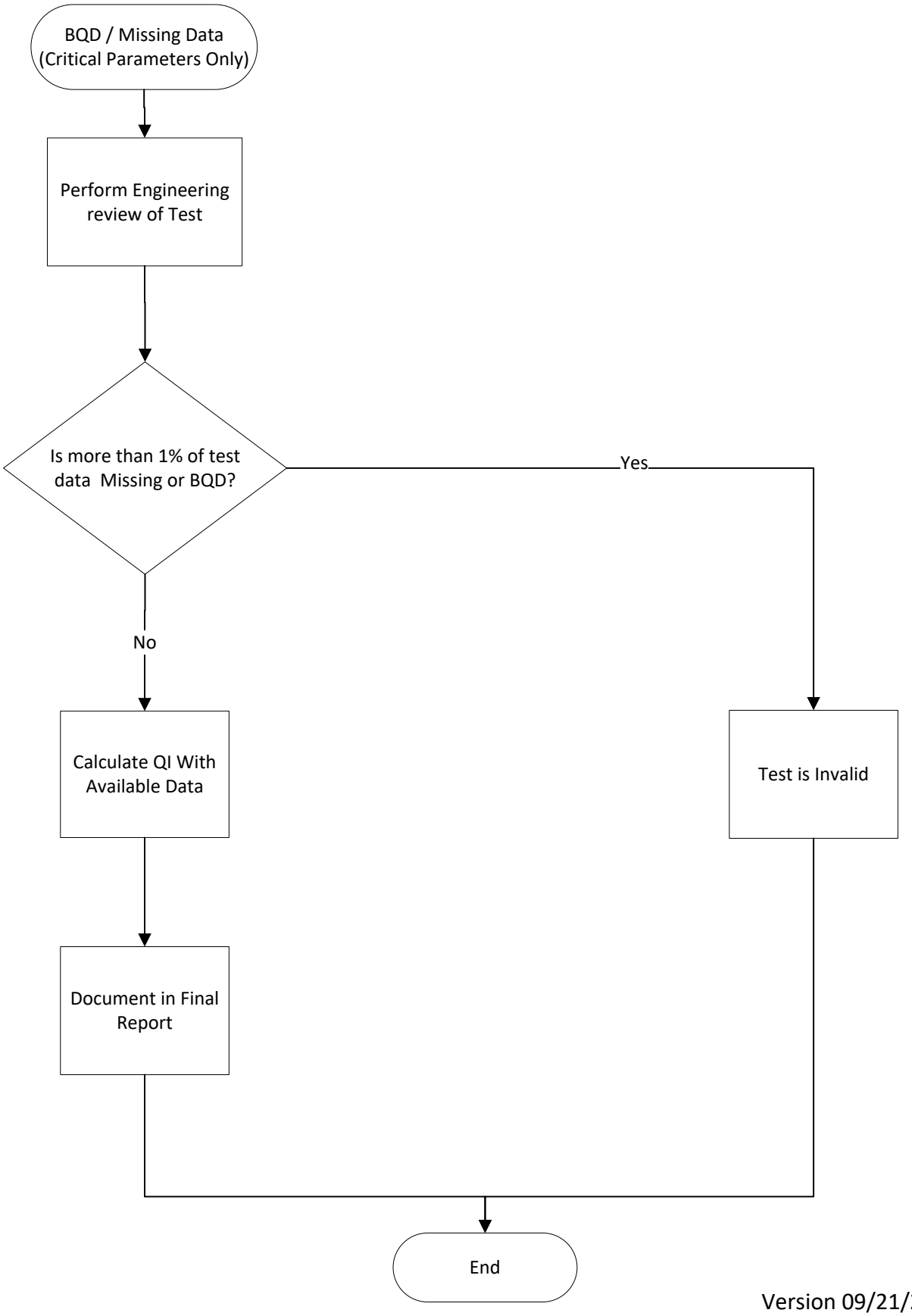
6. Next Meeting will be at the call of the chairman.

7. Adjournment

Attachment #3

DACA II Flow Chart
SwRI recommendation

BQD/Missing Data Flow Chart



Version 09/21/2022

Attachment #4

SwRI Suggested Wording for Addressing Measurement Uncertainty in DACA III

Proposed modification to DACA; SwRI recommendation:

All of the wording below on "Accuracy" is identical to the current wording in DACA II, no changes have been made. It is included for reference.

Accuracy

The System Accuracy Table shown below is the generic capability of an entire measurement system based on current conventional cost-effective technology, taking into account reasonable environmental effects.

The inclusion of this column is intended to serve as a guide to the test developers and surveillance panels as to what is commonly possible using current technology. It is not intended to be an all-inclusive summary of available technology. The DACA III task force has deliberately not listed the capabilities of equipment that, in its judgement, is not appropriate for use in an engine testing environment due to reliability, cost, or performance concerns.

Accuracies are stated for systems that have been calibrated using due diligence with NIST traceable equipment and have been applied using good engineering practices. The recommended method to calculate the system accuracy is the Square Root of the Sum of the Squares of the component accuracy.

New wording below proposed for the DACA III document on Measurement Uncertainty.

Measurement Uncertainty

The concept of uncertainty is relatively new in the history of measurement, although error and error analysis have long been a part of the practice of measurement science or metrology. No measurement is exact. When a quantity is measured, the value depends on the measuring system, the measurement procedure, the skill of the operator, the environment, and other effects. Uncertainty of measurement is a parameter associated with the result of a measurement, that quantifies the range of values that could reasonably be attributed to the item being measured. The parameter may be, for example, a standard deviation (or a given multiple of it) or the half-width of an interval having a stated level of confidence.

The "Guide to the Expression of Uncertainty of Measurement" (commonly known as the GUM) is the definitive document on this subject. The GUM has been adopted by all major National Measurement Institutes (NMIs) and by international laboratory accreditation standards such as ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories. Additionally, the American Society of Mechanical Engineers (ASME) has produced a suite of standards addressing various aspects of measurement uncertainty.

When comparing system uncertainty to system accuracy, the analysis should take into consideration the following standard contributors:

1. Repeatability
2. Resolution
3. Reference measurement standard uncertainty
4. Reference measurement standard stability
5. Environmental factors

The five items listed above are the common sources of error that are included in an accuracy assessment and the minimal uncertainty assessment. When considering expanded uncertainty there are many additional sources of error that are included in the assessment as identified in the GUM document. The level of detail needed to describe the process is beyond the scope of the DACA III document. The intent of identifying uncertainty assessment in DACA III is to advise the reader that this methodology is becoming the industry accepted method of measurement uncertainty assessment.

It is the responsibility of the respective surveillance panels to dictate any specific requirements relative to measurement uncertainty. In many cases there can be more or less stringent requirements for a specific test parameter based on the knowledge the surveillance panel has on the potential impact that a specific parameter has on the test results.